

are: 2' at Eastport, 4' at Portland, 5' at Cleveland; and the *greatest* are 20' at Norfolk and St. Paul, 21' at Keokuk, 19' at La Crosse and Duluth. The *highest maxima* are 90 at Key West, 89° at Jacksonville, 83° at Montgomery, 87° at Mobile and Savannah, 85° at Augusta. The *lowest minima* are 48° at La Crosse, 49° at Eastport, 50° at Duluth.

ATMOSPHERIC ELECTRICITY.

Thunder-storms—have been reported as follows: September 1st, Col., Ga., Ill., Ind., Kan., La., Mass., Me., Miss., Mo., N.H., N. Y., Ohio, Penn., Tenn., Texas, Vt.; 2nd, Ala., Cal., Dak., Ga., Kan., La., Me., Miss., Neb., N. Y., Penn., Texas, S. C.; 3rd, Fla., Ga., Ill., Iowa, Kan., Mich., Miss., Mont., Neb., Wis.; 4th, Cal., Dak., Ga., Ill., Ind., Iowa, Kan., Me., Miss., Neb., N. H., Ohio, Penn., Utah; 5th, Ill., Ind., Iowa, Kan., Mo., Miss., Neb.; 6th, Dak., Ill., Iowa, Kan., Neb., N. C., Penn., Va.; 7th, Ill., Ind., Iowa, Kan., Neb., N. C., Ohio, Va.; 8th, Conn., Dak., Del., Ind., Ill., Iowa, Kan., Miss., Neb., N. H., N. Y., Ohio, Vt., Va.; 9th, Ark., Ill., Ind., Iowa, La., Mich., Mo., Ohio, Tenn., Tex., Wis., Ind. Ter.; 10th, Ala., Fla., Ga., Miss., Ohio, Tenn., S. C., N. C., Penn., W. Va.; 11th, Ala., Fla., Ga., Kan., Miss., Neb., N. Y., N. C., S. C.; 12th, Ga., Kan., Neb., N. C., S. C.; 13th, Ga., Ind., Kan., Mich., Ohio; 14th, Del., D. C., Fla., Ga., Md., Mich., N. J., N. Y., N. C., Ohio, Penn., Va., W. Va.; 15th, Ga., Me., M. T., N. Y., N. J., Penn., Vt.; 16th, Kan., Neb., N. J., N. Y., S. C., Utah; 17th, Iowa, Kan., Neb., N. C.; 18th, Kan., Minn., Neb., Texas; 19th, Ind. Ter.; 20th, Ill., Mich., Miss., N. C., Tenn.; 21st, Ala., Ga., Ind., N. C., Ohio, Tenn.; 22nd, Minn., N. Y., Ohio; 23rd, Del., Ind., Iowa, Mich., N. C., S. C., Va.; 24th, Da., Iowa, Minn., Neb.; 25th, Ill., Ind., Iowa, Ohio, Pa., Tenn., Wis.; 26th, Mich., Miss.; 27th, Cal., Iowa, Neb.; 28th, Ill., Kan., Mich., Neb., Ind. Ter.; 30th, N. C.

Auroras—The principal Auroras have been those of the 13th, 22d, 25th and 26th—they have been observed as follows: On the 13th, Me., Mass., N. Y., Dak., N. H., Vt.; 14th, Ind., Vt., Mich.; 15th, Dak.; 16th, Kan.; 18th, N. Y.; 22nd, Me., Mass., Mich., M. T., N. H., N. Y., Vt., Dak., R. I.; 23rd, Dak., Ohio, Minn.; 24th, Iowa; 25th, Dak., Iowa, Me., Mass., Mich., N. Y., Minn.; 26th, Iowa, Mich., N. Y., Ohio, Dak., Ill., Minn., Mass., Wis.; 27th, N. Y., Ohio, N. J.; 28th, Dak., N. Y.

Solar Halos were observed on the 1st in Ohio, Ill.; 3rd, Ohio, S. C., Mich.; 4th, Iowa, Vt., S. C.; 5th, Ohio, Vt., Va., Wis., D. C.; 6th, N. Y., Ohio, N. J., D. C.; 7th, N. Y.; 8th, Ohio, Tenn., Mich.; 9th, R. I.; 10th, Me., Mass., N. H., N. Y., Ohio; 11th, Ohio, S. C.; 12th, Kan., Ga.; 13th, Ind., Tenn.; 14th, N. C., Me.; 15th, Mich.; 16th, Conn., Me., Mass., N. H., N. Y., Ohio, Tenn., Mich.; 17th, N. H., Tenn., N. Y.; 18th, Ohio, Iowa, Minn.; 19th, Kan.; 20th, Ind., Ohio, Va., W. Va., S. C., Wy. T., Mich., Ga.; 21st, Ohio, S. C.; 22nd, N. C.; 23rd, Conn., Me., Mass., N. H.; 24th, N. H., Me., La.; 25th, Ohio, Tenn., Mich.; 26th, N. M.; 27th, Ind., Mich., Wis.; 28th, Tenn., Vt., S. C., Dak.; 29th, Conn., N. H., N. Y., N. J., Cal., Me., R. I., Ga.; 30th, Miss., S. C.

Lunar Halos.—1st, in N. J., Ill., Tenn., N. C.; 2d, Penn., Mo., Ga.; 3d, Me., S. C., N. C., Mo., Mass., Ga., Miss., Ind., Penn.; 4th, Minn., Mich., Iowa, Ala., N. C., Mo., La., Dak. T., Kan., Ohio, Wis.; 5th, Ohio, Mich., Kan., W. Va., Ala., Va., N. C., N. M., D. C., Ind.; 6th, N. Y., N. J., Mass., Conn., N. C., Me., Tenn.; 7th, N. C., N. J., Tenn.; 8th, N. C., Mo., Ohio; 23d, Tenn.; 24th, Ga., Me., N. C., Miss., Tenn.; 25th, N. J., N. H., Mo., N. M., Miss., Tenn.; 26th, Minn., Ohio, Tenn.; 27th, Minn., Me., Dak. T., Fla., N. C., Mo.; N. H., N. Y., Tenn.; 28th, Ga., S. C., N. C., Ill., Dak. T., Conn., Neb., Mo., Va., Kan., Minn., Tenn.; 29th, S. C., Ohio, Cal., Ala., N. C., Fla., Conn., Ill., Mass., N. H., N. J., N. Y., Tenn., Wis.; 30th, Mich., Fla., Ala., Ind., Minn.

Mirage was observed at Great Bend, Kansas, on the 15th, 21st, 26th, 27th, 29th and 30th; New London, Conn., 5th, 11th, 13th, 19th, 20th and 21st; Gybee Island, 12th; Breckenridge, Minn., 4th, 7th and 25th.

MISCELLANEOUS PHENOMENA.

Zoological.—*Geese* were seen at Lower Brule Agency, Dak., 19th, 20th, 25th, 27th; Hennepin, Ill., flying SW., 29th; at Rockford, Iowa, flying S., 26th; Burlingame, Kan., flying S., 27th; Great Bend, Kan., arrived on 20th; Clear Creek, Nebraska, flying south, 20th; Richmond, Nebraska, flying south, 19th; Bismarck, Dakota, flying south, 27th; Duluth, flying south, 29th; Dubuque, Iowa, flying south, 16th and 28th; Fort Sully, Dak., flying south, 20th to 23rd; Keokuk, Iowa, flying south, 21st; Pembina, Dak., flying SE., 23rd. *Ducks* were seen at Lower Brule Agency, Dak., flying S., 15th, 18th, 22nd; Clear Creek, Neb., flying S., 18th. *Cranes* seen at Great Bend, Kan., flying S., 19th; Bismarck, Dak., flying S., 27th and 28th; Breckenridge, Minn., flying S., 12th and 15th. *Swallows* last seen at Somerset, Mass., on 23rd; left Fall River, Mass., 17th; Chimney Swallows last seen at Contoocookville, N. H., on 19th, and Barn Swallows last seen on the 6th; Swallows last seen at Wappinger's Falls, N. Y., on 16th. *King Bird*, Contoocookville, N. H., last seen on the 14th. *Robins* left Urbana, Ohio, 16th. *Blackbirds* were seen at Golden City, Cal., flying S., on the 30th; at Sedgewick, Kan., flying S., 20th; Urbana, Ohio, left on the 25th. *Plover* seen at Sedgewick, Kan., flying S., 20th, and *Blue-jays* seen at Sedgewick, Kan., 21st. *Wild Pigeons* were seen at Jacksonsburg, Ohio, flying NW., 3rd. *Grasshoppers*, flying NE., on 8th, at Fort Garland, Col.; flying N. at Fort Wallace, Kan., 4th; flying, at Fort Richardson, Texas, from 14th to 18th; at Golden, Col., flying E-SE., 2nd and 4th, flying NW., 6th, flying W. and NW., 15th, flying E-SE., 23rd, flying NW., 25th; Burlingame, Kan., in large numbers, 9th, 10th, 11th, 15th, 20th, 21st; Le Roy, Kan., arrived on the 9th;

Council Grove, Kan., flying S., 4th, 9th, 10th, 13th, 14th and 20th, less numerous 27th; Oregon, Mo., flying N., 1st, NW., 2nd, 4th, 6th, S., 11th and 19th, NW., 22nd, SW., 23rd and 25th, and S., 26th; Plattsmouth, Neb., flying about 1st to 15th; Richmond, Neb., flying N., 4th and 6th, NE., 20th, NW., 21st; Breckenridge, Minn., flying S., 26th; Corsicana, Texas, flying S., 21st and 22nd, W., 23rd., on 30th were destroying everything, and depositing millions of eggs; Cheyenne, W. T., flying SE., 1st, 10th, 24th, S., 6th, NW., 8th; Dodge City, Kan., abundant, flying N., 2nd and 4th, E., 8th and 9th, less abundant 6th and 7th; Denver, Col., more or less abundant, 1st to 24th; Fort Sully, Dak., disappeared on 1st; Fort Gibson, Ind. Ter., 16th to 28th; Salt Lake City, Utah, migrating 28th; Omaha, Neb., carried away by high winds, 1st. *Locusts*—at Sedgewick, Kan., destroying gardens, 8th, flying SE., 9th and 20th; at Coalville, Utah, flying S., 26th, 27th, 28th.

Water-spout.—The observer at New River, N. C., reports as follows upon a water-spout which occurred on the 13th; at 5:20 p. m., a strange phenomenon was observed originating from the apex of a cumulo-stratus cloud, very near the beach. The base of the cloud was apparently about two hundred feet above the surface of the sea; a rushing noise and gyratory motion at the base of the cloud attended the phenomenon at its first appearance, and soon the cloud projected downward, lashing the sea in a furious manner; a deafening roaring of the water was heard, and in a few moments a completely-formed water-spout appeared; the column of water rose to the height of about forty feet, having a diameter of about twenty feet at its base. The water-spout now moved northward towards the beach, and twenty minutes after its formation the cloud rose and the column of water fell obliquely, in the direction of its course, on the beach, cutting a trench in the sand, ten feet in depth and twenty-five feet in width, throughout the entire length of the column.

Icebergs.—September 18th, in latitude, $46^{\circ} 42' N.$, longitude, $48^{\circ} 30' W.$; 20th, in latitude, $46^{\circ} 40' N.$, longitude, $47^{\circ} W.$; 26th, in latitude, $45^{\circ} 29' N.$, longitude, $51^{\circ} 3' W.$; 27th, eighty large icebergs were seen in the location ranging from latitudes, $43^{\circ} 30'$ to $45^{\circ} 57' N.$, and longitudes, 49° to $50^{\circ} 38' W.$

Prairie or Forest Fires have occurred near the following stations: Pembina, Dak., 24th; Corsicana, Tex., 25th; Fall River, Mass., from 6th to 15th.

Zodiacal Light, 22nd, Golden, Col., 26th and 27th, Carthage, Ohio.

Polar Bands have been observed as follows: Tybee Island, 12th; Guttenberg, Iowa, 18th, 19th and 25th; Iowa City, Ia., 27th; Tabor, Ia., 28th.

Meteors have been observed as follows: On the 2d at Lyndon and Carbondale, Ill., (NE. to SW.) 8th, Vevay, Ind.; 9th and 12th, Mt. Auburn, Ohio; 15th, Leesburg, Ind., Davenport, Iowa; 16th, Lyndon, Ill., Sedgewick, Kan., Brookhaven and Fayette, Miss., Fort Sully, St. Louis; 17th, Leesburg, Ind., Mt. Auburn, Ohio, Davenport, Iowa; 18th, Leesburg, Ind., Rocky Run, Wis.; 20th, Abington, Ill., Davenport, Ia.; 21st, Lyndon, Ill., brilliant 1:40 p. m., W. to N.; Afton, Ia., Brookhaven, Miss., Davenport, Ia., 22d, West Charlotte, Vt., Davenport, Ia.; 23d, Moorhead, Minn., Brookhaven, Miss., Jacksonburg, Ohio; 24th, Litchfield, Mich., Davenport, Ia.; 25th, Anna, Ill., Starkey, N. Y.; 26th, Vevay and Leesburg, Ind., Davenport, Ia.; 27th, Abington, Ill.; 29th, Ephrata, Penn.

Earthquakes.—September 21st a slight shock was reported at Fort Adams, R. I.; it was apparently from east to west, and lasted about ten seconds. On the same day shocks were felt at Bedford, Fair Haven, Fall River, Amherst, Dartmouth, Somerset and Wood's Hole, Mass., and at Newport, R. I. On the 24th a heavy shock was reported at Friendsville, Ill., and a slight shock at St. Louis, Mo.; it was also felt at New Harmony and St. Meinrad, Ind. On the 25th two distinct shocks were felt at Mt. Carmel, Ill., 12:15 a. m.; quite sensible shocks were also noticed at Belleville and other points in southern Illinois. On the same day a slight shock was experienced at Indianapolis, Ind., and two violent shocks were reported at Evansville, Ind. On the 26th a slight shock was reported at Friendsville, Ill.

PUBLISHED BY ORDER OF THE SECRETARY OF WAR.

Albert J. Myer

Brig. Gen. (Bvt. Asst. Gen.) Chief Signal Officer, U. S. A.

Copy furnished for